THE ESTABLISHMENT AND OPERATION OF THE TANZANIA TECHNOLOGY TRANSFER (T^2) CENTRE

by

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ABSTRACT

Tanzania Technology Transfer (T^2) Centre was established in mid 1997 by the Tanzania Ministry of Works in co-operation with the Faculty of Engineering of the University of Dar Es Salaam and support by the US Federal Highway Administration (FHWA).

The mission of the Tanzania T^2 Centre is "To improve the quality of road transportation by having a well-maintained road network and an efficient road transportation sector through dissemination of information and training of both providers and users of road." The main tasks of the Tanzania T^2 Centre are improvement of information and experience sharing, education and training.

The paper outlines the background leading to the establishment of the T^2 Centre, the process undertaken, difficulties and problems experienced.

The paper continues by elaborating on the operations of the Tanzania T^2 Centre, the successes achieved so far and discusses the strategies being undertaken to enhance the capacity and make the centre semi-autonomous and become sustainable.

1.0 BACKGROUND

Tanzania is a country with an area of about 945,000 km^2 and an estimated population of about 30 million people. Tanzania has a road system of about 85,000 kms out of which only 5% is paved and the rest 95% are unpaved. It consists of 10,300 km of trunk roads out of which 4,000 km are paved and 6,300 km unpaved, 24,700 km of regional roads and an estimated 50,000 km of district, urban and feeder roads. The bulk of the road network is in poor condition and many need rehabilitation before considering it for normal routine and periodic maintenance. The newly established road agency TANROADS which came into operation on the 1st day of July, 2000, is responsible for trunk, regional and essential feeder roads. The responsibility for district, urban and feeder roads rests with the Local Authority Districts and Municipalities. As in many countries, Tanzania's roads are by far the most dominant mode of transport carrying about 80% of all freight in the country. Road infrastructure is vital to the development of Tanzania's economy; 64% of all transit cargo destined for neighbouring countries of Uganda, Rwanda Burundi, Zambia, Malawi and Democratic Republic of Congo, is transported by road and the agricultural sector, which accounts for 50% of GDP and which provide 55% of foreign exchange earnings, relies heavily on the road infrastructure.

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Soon after independence in 1961, Tanzania embarked on massive infrastructure development including roads network, which expanded at an annual rate of about 9% from 32,000 km in 1961 to about 85,000 km in 1990. The period between 1968 and nineteen eighties saw the rate of economic growth dwindle, reaching negative values during 1980's. Consequently funds allocated for roads maintenance declined drastically from USD 800 per km for trunk roads in 1968 to less than USD 400 per km in 1990. Preventive maintenance operations suffered the most.

During the appraisal and subsequent launch of the Integrated Roads Project (IRP) in 1991, it was realised that the roads network had deteriorated at alarming rate where only 15% of trunk roads were in good condition by 1990. The primary objectives of IRP were to improve road transport by conducting road rehabilitation, upgrading and maintenance of trunk and regional road network which has become an obstacle to the sustainability of the economic recovery programme and to develop the Ministry of Work's institutional capacity.

In a bid to establish a sustainable roads and pavement maintenance, several measures have been pursued for the past 10 years under Integrated Roads Project. Efforts by the Government include upgrading and rehabilitation of trunk, regional and essential feeder roads, establishment of the Tanzania Technology Transfer Centre in mid 1997 and establishment of the Road Fund for maintenance by an Act of Parliament in November 1998. Subsequently a Road Fund Board with majority of its members from the road users has been formed to manage the funds. The Ministry of Works has established a semi-autonomous executive road agency known as TANROADS as from 1st July 2000, required to manage the trunk and regional road network in a commercially oriented and most cost-effective business practice. Such undertaking will generally alleviate the critical deficiencies towards sustainable road maintenance. Meanwhile however, further measures towards solving imminent problems have to be tackled concurrently in order to realise an early impact. One of the means for solving imminent problems is through technology transfer

2.0 BASIC PRINCIPLES OF TECHNOLOGY TRANSFER

Technology transfer can be defined as any process by which existing research findings or new technology are transformed into useful processes, products or programmes. Commonly used methods for technology transfer includes seminars, workshops, newsletters, videotapes, short courses, publications, Internet home pages, hands-on demonstration and partnering.

The road network transport of any country plays a vital role in growth of its economy. Technology transfer plays an important role in development of a well-functioning and efficient road transportation system. Technology transfer in the transportation sector, as in any field, is a catalyst for change. Transportation Technology Transfer Centres have emerged as effective agents in the process for continuous improvement. In the United States, it is reported that a network of technology transfer centres affiliated with the Local Technology Assistance Program have implemented various technologies and saved an estimated $54 million across the country. The potential for expanding this success around the world is already underway in Latin America, Caribbean, Africa and Europe.

2.1 Why a Technology Transfer Centre

Road transportation professionals and organisations (public and private) worldwide need information and knowledge that will enable them to advance their processes, incorporate new products into existing programs, and increase technical know-how that produces positive change and impact on road systems. A huge universe of institutional and technical knowledge exists and continues to be developed that can be tapped to fulfill varying information and resource requirements.

Technology Transfer Centres can serve as focal point and an institutionalised catalyst for technology transfer activities. They should be considered as part of a larger process of the ongoing technology transfer process, and not the sole vehicle for it.

The primary objective is to facilitate the acquisition and dissemination of technology, practice and policy knowledge and know-how that is relevant to a local operating road transportation environment. They can be general in handling road transportation topics, and adapting techniques to local conditions, or can be specialised if desirable or necessary.

The benefits of a technology transfer centre are:

- Reducing or eliminating duplication or redundancy of products and process development by road agencies, thereby conserving resources.
- Learning of beneficial policies, technologies, programs and developments earlier and more systematically.
- Improving skills, which will lead to, improved road transportation systems.

2.2 What is a Technology Transfer Centre

A Technology Transfer Centre can be:

- A local, national, regional and international conduit between technology and policy developers and users.
- Repository for information about technologies and resources; from cutting edge, or appropriate technology, to good practice.
- A focal point for advancing best practices through a variety of media and training.
- A platform for systematic technology transfer activities that meet unique local transportation requirements.
- A catalyst for improvements and enhancements of local practices.

These roles serve to increase awareness of the technology and practices within local agencies and by individuals responsible for road and infrastructure construction and maintenance.

2.3 Case Studies of Technology Transfer Centres World-Wide

Over the past 15 years, over 100 road related technology transfer centres have been developed around the world. Although they share some basic characteristics, they often differ in institutional structure, relationships and programs delivered. Worldwide there are highways and transportation related technology transfer (T^2) centres in the following countries and regions:

- USA: there is one technology transfer (T^2) centre in each of the 50 states in the United States and 7 more T^2 centres serving local and tribal governments.

- Latin America: There are more than 90 technology transfer centres in Latin America as part of the Pan American Institute of Highways.
- Baltic Region: There is a technology transfer centre is each of the four countries constituting the Baltic Region (Finland, Estonia, Latvia, and Lithuania).
- Sub-Sahara Africa: There is a technology transfer centre in each of the countries of the Republic of South Africa, Tanzania, Zimbabwe and Malawi.

Technology transfer centres are important means for moving innovative transportation technologies out of the library and off the shelf into people who construct and maintain roads. For instance, the US Local Technical Assistance Program (LTAP) T^2 centres were established with a view to transferring technology to local level. The mission of the US Local Technical Assistance Program is to foster a safe, efficient and environmentally sound transportation system by improving knowledge of local transportation providers through training, technical assistance and technology transfer. All US LTAP T^2 centres have six basic activities:

- Publishing a quarterly newsletter.
- Serving as clearing house for transportation information.
- Maintaining mailing list of tribal, local and rural officials having transportation responsibilities.
- Conducting training courses.
- Providing information on new and existing technologies.
- Performing a self-evaluation of the programme.

A successful technology transfer centre should be based on local projects and initiatives. Unless there is a local ownership, a technology transfer centre may end up to be an unused machinery or training a few staff that will not be able to effectively apply newly acquired ideas. To ensure ownership of the technology transfer process, the local initiative should come from a local institution that enjoys a partnership with all main actors in the road sector, and which can unify their efforts. According to Permanent International Association of Road Congresses (PIARC) now known as the World Road Association (WRA), technology transfer centres are becoming more important as tools of dissemination of information among PIARC member countries around the world. The dissemination involves the following main steps:

- defining the technology to be transferred,
- identifying the right skill to implement the technology transfer,
- identifying training needs,
- identifying and validating the underlying knowledge and know-how
- implementing test courses, training trainers and monitoring,
- conducting training,
- evaluating training,
- targeting training towards specific groups.

‘‘Technological exchange is at the core of PIARC’s mission. Technology transfer centres are being promoted by PIARC as one way to enhance and regularise the dissemination and implementation of innovative technology within a country or geographical area’’.

3.0 THE TANZANIA TECHNOLOGY TRANSFER (T^2) CENTRE

3.1 Establishment

The Tanzania Technology Transfer (T^2) Centre was established in mid 1997 by the Ministry of Works in Tanzania in collaboration with the Faculty of Engineering of the University of Dar Es Salaam and support from the US Federal Highway Administration (FHWA). The Centre is located at the Faculty of Engineering of the University of Dar Es Salaam. The establishment of T^2 Centre is an initiative that aims at improving transport infrastructure in the country at all levels through technology transfer. In short the Tanzania T^2 Centre is a clearing-house for highway and transport information where technological information from different parts of the world is collected, sorted and tailored to suit local conditions and then disseminated across the whole transport industry from the national to local level.

Establishment of the T^2 Centre in Tanzania is expected to bridge the gap between research and practice by translating the state-of-the-art highway and transportation technologies into simple terms understood by road authorities and users in Tanzania. The T^2 Centre is to enable users and providers of road transport in the country to keep pace with the fast changing highway and transportation technology.

Apart from the US Federal Highway Administration's support to the T^2 Centre, arrangements for twinning the Centre with the Alabama T^2 Centre/Department of Transportation in the USA have been initiated.

3.1.1 Mission

The immediate mission of the Tanzania T^2 Centre is to improve the quality of road transportation by having a well-maintained road network and an efficient road transportation sector through dissemination of information and training of both providers and users of roads.

Presently the Centre has limited its operations to road transport. However, its long-term mission is to cover all transport modes.

3.1.2 Terms of reference

As first step towards establishment of the T^2 Centre, the Ministry of Works drafted Terms of Reference (TOR) for the Centre. The TOR were discussed and agreed at the sensitisation and planning workshop held in February 1998 involving stakeholders. Aspects covered by the Terms of Reference are: -

- Objectives
- Areas to be promoted by the Centre
- Resources required
- Management of the Centre

3.1.3 Objectives

The general objective of the Tanzania T^2 Centre is to carry out activities aimed at improving road transport in the country through dissemination of relevant information and training.
Specifically, the T^2 Centre aims to achieve the following:

(i) To disseminate engineering information that better reflect the environmental impact.

(ii) To promote the creation and dissemination of suitable technologies
(iii) To develop and apply measures of sustainability
(iv) To serve as a catalyst for professional exchange among engineers and other professionals who create the transport infrastructure.
(v) To reach around the world.

In the course of implementation of the technology transfer centre programme in Tanzania, it has been found necessary to review the specific objectives of the T^2 Centre. The draft revised specific objectives of the Centre are to: -

(i) promote and enhance sharing of technical, managerial and policy related information on road transport system in Tanzania,
(ii) provide local transportation and highway agencies and road users an access to international, regional and national state-of-the-art technological advancements,
(iii) enhance science education with special emphasis on transportation and highway related subjects in Tanzania, and
(iv) foster regional and international co-operation in implementation of highway and transportation related technologies.

It is planned for the draft-revised specific objectives to be discussed and agreed at a workshop involving stakeholders.

3.1.4 Programme areas

Programme areas for the Centre are: -

a) Technological Research and Development
   (i) Development of indigenous capability in infrastructure construction and maintenance
   (ii) Exploitation of locally available construction materials
   (iii) Promotion of the deployment of human resources
b) Local Technology Transfer
   (i) Assessment of technology transfer operations
      - what technology is to be transferred
      - to whom it is to be transferred
      - where and when is the transfer to take place
      - how shall the technology be transferred
   (ii) Develop methods and techniques for preparing users for reception of desired technology
   (iii) Develop relevant training programmes
   (iv) Develop methods for acquisition of technology with a view to generating local technology through locally conducted research
   (v) Establish a network of laboratories or research centres and local mailing list
c) Networking with other T^2 Centres world-wide
   (i) compile local technical literature
   (ii) compile and maintain mailing list world-wide
   (iii) procure modern communication equipment
   (iv) publish a quarterly Newsletter
d) Serving as a node for World Interchange Network (WIN)
e) Serving as focal points of Sub-Saharan African Road Information Network (SSARIN)

3.1.5 Resources required

Planned resources required included:-

(a) Personnel

- Manager
- Technician – Programme Engineer
- Secretary cum Administrative Assistant

(b) Facilities

- Office
- Computers and modem
- Fax Machine
- Vehicle preferably a van for conducting outside classes
- Video Screen and accessories

(c) Funding

The T^2 Centre is currently funded by the Government of Tanzania through the Ministry of Works and other sponsors/supporters including the University of Dar Es Salaam and US Federal Highway Administration. The Ministry of Works meet the recurrent costs which include costs for training, seminars, workshops, remuneration for Manager and support staff, transport, stationery, mailing, telephone, fax and e-mail bills. The University of Dar Es Salaam is to provide office space for the T^2 Centre, meet the cost of electricity and water supply and avail its postal services, classrooms and hall facilities for use by the T^2 Centre. However funding available is not enough to cover fully the establishment requirements and to enable the Centre carry out planned programs efficiently and effectively. In an effort to bridge the funding gap, the T^2 Centre has started generating revenue from fees charged for participation at short courses and seminars/conferences. The Centre's future plans are to increase funding to the Technology Transfer Centre from the following main sources; -

a) Government through the Ministry responsible for the main road network.
b) Own generated revenue from some of the activities carried out by the Centre e.g.

- ♦ Subscription for participation at seminars, workshops and conferences,
- ♦ Fees for short training courses,
- ♦ Sale of publications,
- ♦ Advertisements in the T^2 Centre Newsletter,
- ♦ Consultancy services, etc. This means customers have to pay for some of the services provided by the T^2 Centre.

c) Donations from supporters/(donors/sponsors).
d) Contributions by public and private sector stakeholders.

3.1.6 Management of the Centre

Activities of the Tanzania T^2 Centre are steered by the Management Committee, which comprises 13 members representing stakeholders in the road sector. The Centre is a semi-autonomous unit run by a Manager who is answerable to the Management Committee. The current T^2 Centre Management Committee is chaired by the Director of Rural Roads in the Ministry of Works and comprises members from: -

1. Ministry of Works,
2. Ministry of Communications and Transport,
3. Ministry of Regional Administration and Local Government
4. University of Dar es Salaam, Faculty of Engineering
5. TANROADS,
6. National Construction Council,
7. Association of Consulting Engineers Tanzania,
8. Tanzania Civil Engineering Contractors Association,
9. Tanzania Roads Association,
10. Institution of Engineers Tanzania,
11. Contactors' Registration Board and
12. T^2 Centre Manager as the Secretary of the Committee.

Originally the Management Committee comprised only 11 members. In the course of operations of the Centre's activities it has been found necessary to include members from newly established Road Agency TANROADS and Ministry of Regional Administration and Local Government. The tenure of office for the Management Committee is three years and it is required to meet every three months (ie. four times a year).

3.1.6.1 Duties and responsibilities of the Management Committee

(i) The Management Committee have the overall responsibility for running the T^2 Centre. It is required to receive and approve annual budget proposals, work programmes, and monthly and quarterly reports from the Manager.

(ii) The Management Committee is required to meet every three months to transact business and review progress of the Centre

(iii) The Management Committee is to prepare and send to its principal stakeholders, namely the Ministry of Works, The Faculty of Engineering University of Dar Es Salaam and FHWA, quarterly and annual report on the activities of the Centre.

3.1.7 Staffing recruitment

The T^2 Centre has recruited the following staff:

- Manager, who is the Chief Executive of the Centre and is responsible for the day to day operations of the Centre.
- Programme Engineer
- Secretary cum Administrative Assistant
- Driver cum Messenger

Originally it was planned to recruit the Manager from the open market. Lack of funding for remuneration of the Manager resulted in delay of about two years for recruitment of the T^2 Centre Manager. Finally the Ministry of Works decided to appoint two of its engineers to work full time at the Centre assuming responsibilities of the Manager and Programme Engineer.

3.1.8 Sensitisation and planning workshop

The T^2 Centre organised a sensitisation and planning workshop in February 1998. The objectives of the workshop were: -

- To sensitise the public on Technology Transfer related issues
- To prepare a 3 year (1998 – 2001) Vision Plan for the T^2 Centre

Agreement was reached at the workshop with regard to the main tasks and typical activities of the T^2 Centre.

3.1.9 Main tasks and typical activities of the Centre

3.1.9.1 The main tasks of the Tanzania T^2 Centre are:

- Improvement of information and experience sharing
- Education and training

3.1.9.2 Typical activities of the Tanzania T^2 Centre are:

- Carrying out needs assessment (identification of gaps): The purpose of the needs assessment exercise is to identify customers' needs (gaps) with a view to appropriately plan future activities for the T^2 Centre to address the needs.
- Compilation and updating of local and international mailing list comprising institutions, organisations and individuals involved in transportation and technology exchange.
- Conducting short training courses.
- Organising seminars, workshops and conferences.
- Publishing newsletters: The newsletter for the T^2 Centre (TanT^2 Newsletter) is intended to be published every three months and publishes articles relevant to highway and transportation related technologies that include road construction and maintenance.
- Organising exchanges of visit between Tanzanian officials and their business partners world-wide. The main focus of these exchanges of visit is learning more and sharing experience and information on technology transfer process, institutional and organisational functions and innovative highway and transportation practices.
- Running a TRAC Programme. The T^2 Centre has started preparations for introduction of the TRAC Programme in selected secondary schools in Tanzania. The Acronym TRAC stands for Transportation and Civil Engineering. The acronym also applies for the TRAC PAC mobile laboratory, which is Transportation Activity Centre. TRAC is a hands-on science and mathematics educational programme. Components of a set of TRAC equipment are a computer with installed customised software and a mini-laboratory of electronic equipment. The TRAC equipment can measure force, sound and motion. By engaging students to solve real-world problems using the TRAC equipment, TRAC connects students to the work world of transportation and civil engineering and inspires them to consider careers in the field of transportation and civil engineering.
- Marketing of the activities/services offered by the T^2 Centre. Activities of the T^2 Centre are to be promoted through: -
  - publication of the T^2 Centre Newsletter,
  - running T^2 Centre programmes (eg. short courses, seminars, assisting stakeholders in accessing technological information etc.)
  - presentations of T^2 Centre activities at different forums attended by stakeholders (eg. seminars, workshops etc.)

- production and distribution of brochure on T^2 Centre
- production and distribution of badge/pin on T^2 Centre logo
- production and distribution of sticker on T^2 Centre logo
- production and distribution of T^2 Centre Calendar

3.1.10 Co-operation between Ministry of Works (MOW), University of Dar Es Salaam (UDSM) and US Federal Highway Administration (FHWA)

(i) Memorandum of Understanding (MOU) between MOW and UDSM

In February 1999, the Ministry of Works and University of Dar Es Salaam signed the MOU for establishment of the Tanzania T^2 Centre. The content of the MOU includes: -

- agreement to co-operate in establishment and operation of a Technology Transfer Centre in Tanzania
- defining duties and responsibilities of the Ministry of Works and University of Dar Es Salaam.

Responsibilities of Ministry of Works are:

- Meeting recurrent costs for the T^2 Centre
- Appointing members of the T^2 Centre Management Committee and Chairperson
- Procurement of services for the T^2 Centre Manager and support staff
- Providing other logistical support as required.

Responsibilities of UDSM are: -

- Providing rooms for office and library
- Availing postal services for use by the Centre
- Availing classrooms and hall facilities for training, seminars and workshops
- Providing other logistical support as required

- Opening of a bank account in the name of Tanzania T^2 Centre at a commercial bank. An auditing of the account to be done annually by an independent auditor.

(ii) Memorandum of Understanding (MOU) between US FHWA and Ministry of Works

The US Federal Highway Administration (FHWA) and Ministry of Works in Tanzania have exchanged letters of commitment to co-operate in the field of highway transportation technology. Co-operative activities include: -

- The establishment of the Technology Exchange Centre (T^2 Centre) in Tanzania
- The exchange of information on highway transportation technology
- The joint development of personnel exchanges and twinning programmes for institutions in the transport sector
- The establishment of programmes for exchange of highway transportation technology with counterpart agencies and related entities in other countries
- The undertaking of co-operative projects to facilitate the exchange of highway transportation technologies.

The Memorandum of Understanding between FHWA and MOW based on the above mentioned commitment has been drafted. It is expected for the MOU to be signed soon.

3.2 Operations

3.2.1 Planning and implementation of the programmes

Based on need assessment, each year the T^2 Centre prepares and implements an annual work plan, after being approved by the T^2 Centre Management Committee. The work plan describes what, when, who, where and how to be done in that particular financial year. The Centre has adopted the Government financial year, which starts in July.

3.2.2 Accomplishment of the Tanzania T^2 Centre

Since the decision to establish the Tanzania T^2 Centre was made in mid 1997, some progress has been attained towards realization of the objectives. Activities accomplished to-date include: -

(i) The T^2 Centre Management Committee comprising members from the transport industry has been appointed and is operating. Eight Management Committee Meetings have been held by March 2001.

(ii) Ministry of Works has appointed two of its engineers to work full time at the Centre assuming responsibilities of the Manager and Programme Engineer. The Manager is the Chief Executive of the Centre. Furthermore, the Centre has employed a Secretary cum Administrative Assistant and a Driver cum Messenger.

(iii) The Centre organised a sensitisation and planning workshop in February 1998 that prepared a three-year (July 1998 - June 2001) vision plan for the Centre.

(iv) In February 1999 an Interim Memorandum of Understanding (MOU) was signed between Ministry of Works and the University of Dar Es Salaam on establishment and operation of Tanzania Technology Transfer Centre.

(v) The T^2 Centre has received a number of publications and videotapes from FHWA and other sources.

(vi) The T^2 Centre has received some office equipment and four sets of TRAC equipment from the US FHWA.

(vii) Organising exchange visits between officials from US FHWA, South African Department of Transport and Tanzania on establishment, follow up of progress of the T^2 Centre and technology transfer. Up to March 2001, a total of **21 exchange visits have been made**.

(viii) The T^2 Centre has started preparations for introduction of TRAC Programme in selected secondary schools in Tanzania. TRAC Trainers Course has been conducted to teachers in three pilot secondary schools of Mzizima, Jangwani and Azania in Dar Es Salaam.

(ix) Publication of the first issue of the T^2 Centre Newsletter in September 1999. Due to a number of constraints, it has been difficult to fulfil the set target of publishing the newsletter every three months. Steps are being taken to rectify the situation. Currently the mailing list totals to about 600 institutions/individuals.

(x) Organising the First Seminar on Road and Bridge Maintenance in Tanzania; held on 13th April 2000 at TANESCO Training Institute Morogoro, Tanzania.

(xi) Organising the First Short Training Course on Road Works Contract Management; held 8th to 12th May 2000 at Njuweni Hotel Kibaha, Tanzania.

(xii) Facilitating the Contractors Development Mission, which took place 4th to 16th June 2000. This included the visit to Tanzania by Officials from the US construction industry

with representatives from National Association of Minority Contractors, US Federal Highway Administration, University of Maryland Eastern Shore and the RMI of the World Bank. The focus of the visit was to work together with counterpart Tanzanian officials in carrying out a fact finding with regard to the construction industry in Tanzania, developing workshop presentations and conducting a workshop on local contractors development and chart out strategic recommendations for local contractor development focusing on:

- Assistance in development of local highway and transportation contractors.
- Training and technical assistance
- Opportunity for partnering, joint ventures and subcontracting
- Financial Support

At the end of the visit two Memorandum of Understanding (MOU) were signed. The first one between the US National Association of Minority Contractors (NAMC) and Tanzania Civil Engineering Contractors Association (TACECA), and the second MOU were between TACECA and the Tanzania Women Engineers, Quantity Surveyors and Architects Association (WEQA).

(xiii) Sensitisation of stakeholders on activities of the T^2 Centre and how to make use of the services of the Centre. This has been carried out through the T^2 Centre newsletter and presentation of paper(s) at different forums attended by stakeholders (eg. TACECA Workshop, Contractors Annual Workshops, Annual Road Convention 1999, Seminars and Short Courses Organised by the T^2 Centre etc.).

(xiv) Tanzania Technology Transfer Centre has been included in the pilot phase of the T^2 Centre Project under World Road Association (PIARC) beginning October 2000. Benefit under the project include: -

- Tanzania T^2 Centre to get seed money of US$ 10,000
- Tanzania T^2 Centre to start receiving standard technological publications and documents from PIARC and co-operating institutions
- Tanzania T^2 Centre to access PIARC website

3.2.3 On-going and upcoming T^2 Centre activities

The Tanzania T^2 Centre is carrying out a number of activities programmed for financial year 2000/2001. These on-going and upcoming activities include: -

(i) Carrying out needs assessment.
(ii) Updating of the mailing list.
(iii) Organising a short course on Train the Trainers in Work Zone Safety
(iv) TRAC Programme, hands on science programme for secondary school students.
(v) Publishing of T^2 Centre Newsletters.
(vi) Establishment of a T^2 Centre Web-site.
(vii) Computerising the T^2 Centre Library
(viii) Procurement of necessary equipment which include power point projector.
(ix) Organising the "First Road Transportation Technology Transfer Conference in Africa (Africa T^2 2001) to be held at Arusha International Conference Centre 23rd to 25th May 2001.
(x) Exchange visits. This covers study tours, sharing experiences with other SADC countries in establishing T^2 Centres, attendance at conferences/seminars.

(xi) Review of the establishment of the Tanzania T^2 Centre with the objectives of transforming the Centre to fully semi-autonomous institution with sustainable funding sources.

(xii) Organising the Stakeholders Workshop to review the establishment and operations of the T^2 Centre and prepare the vision plan for another term of three years.

(xiii) Contractors Development Mission (CDM). Facilitating implementation of strategic workshop recommendations on local contractor development agreed upon during the visit made by US Contractors Development Mission 3rd – 16th June 2000.

(xiv) Loaned Staff Program. One Tanzanian Engineer from the National Construction Council is currently on 18 months practical training working at the National Highway Institute (NHI) in the USA assisting NHI in developing training programmes for developing countries.

3.3 Challenges Encountered and Lessons Learnt in Establishment and Operation of the T^2 Centre

- Many stakeholders in the transport sector are not aware of the existence of the T^2 Centre and therefore very few utilise the services available at the T^2 Centre.
- Due to lack of funds recruitment of a permanent staff to take up responsibility as the Manager for T^2 Centre was delayed for two years until when the Ministry of Works decided to allocate two of its engineers to work at the Centre.
- Unattractive remuneration package being offered for T^2 Centre staff making it difficult to retain staff for sufficiently reasonable period.
- Lack of sustainable funding and T^2 Centre not being fully established as a semi-autonomous institution. On going reforms in the road sector have started affecting the performance of the Centre on issues of funding, staffing and organisation. There is a need to review the establishment of the T^2 Centre and establish the Centre by a legislation to guarantee funding and sustainability for efficient and effective delivery of services.
- By locating our T^2 Centre at the University of Dar Es Salaam, some customers' in particular practising stakeholders, regard the Centre as another academic institution dealing with complicated issues and therefore loose interest in T^2 Centre activities. Deliberate measures need to be taken to get rid of this misconception.

3.4 Future Perspective for the Tanzania T^2 Centre

The main challenge ahead of the Tanzania T^2 Centre is to address issues of sustainability and provide quality service to its customers. To ensure this, the T^2 Centre will have to:

(i) Continue promoting the use of the T^2 Centre.

(ii) Determine and prioritise user needs.

(iii) Identify technology to transfer.

(iv) Develop performance measures (indicators of accomplishments) that will be used as a self-evaluation mechanism for the technology transfer programme in Tanzania.

(v) Carry out activities aimed at enhancing its capacity and ensure sustainable funding to be able to run programmes effectively and efficiently.

4.0 CONCLUSION AND RECOMENADTIONS

- Despite of the short period of three and half years since initiation of the Tanzania Technology Transfer Centre, substantial progress has been made in terms of establishment of the T^2 Centre as well as carrying out highway technology transfer activities.
- The T^2 Centre has organised a considerable number of exchange visits and received a number of publications and videotapes, which are available at the T^2 Centre Library for use by the stakeholders. Low utilisation of the available technological publications is a major challenge for the T^2 Centre, which calls for improvement/enhanced marketing strategies for T^2 Centre and its programmes.
- The T^2 Centre has started organising seminars, conducting short courses, publication of the newsletter, organising and facilitating the contractor development mission and now organising the First T^2 Conference in Africa. These are positive achievements of the technology transfer programme, which need to be enhanced (supported) to enable full establishment of the T^2 Centre and build appropriate capacity for delivery of quality services to its customers.
- Effective use of the T^2 Centre will enhance better sharing of information on the latest road transportation technologies. Use of innovative methods through intelligent use of technology transfer will enable Tanzania to develop a sustainable road network compatible with the latest global transportation demand and standards.
- The Tanzanian experience in the establishment and operation of the T^2 Centre can be offered to other countries, which are in the process of establishing such a Centre.

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